WHAT IS CLAIMED IS:

1. An apparatus for cutting sheet type work material comprising:

a resonator assembly, said resonator assembly including;

a magnetically permeable beam;

a magnetic pickup coupled to said beam;

a blade coupled to said beam and defining at least one sharpened edge;

at least one discreet magnet positioned proximate said pickup, said magnet and said pickup defining an air gap therebetween;

resonating means for moving said at least one discreet magnet relative to said pickup to create an alternating magnetic field, thereby causing said pickup to vibrate which in turn causes said beam and said blade to vibrate; and whereby

said vibration of said blade allows the sharpened edge to cut through the work material.

2. An apparatus as defined by claim 1 further comprising:

a frame having a support surface mounted thereon for carrying at least one layer of sheet-type work material;

a carriage coupled to said frame for movement back-and-forth there along in a first coordinate direction in response to commands issued from a controller;

a cutter head coupled to said carriage for movement back-and-forth in a second coordinate direction also in response to commands issued from said controller, said second coordinate direction being approximately perpendicular to said first coordinate direction; and

said resonator assembly being coupled to said cutter head for movement between a working position wherein said blade engages said work material carried on said support surface, and a non-working position wherein said blade is positioned away from said work material.

3. An apparatus as defined by claim 1 wherein said resonating means includes;

a magnet retainer having said at least one discrete magnet coupled thereto;

a motor;

said magnet retainer being rotatably coupled to said motor; and wherein

rotation of said motor and thereby said magnet retainer causes said at least one magnet to pass by said pickup at a known frequency thereby generating an alternating magnetic flux that in turn causes said blade to resonate.

4. An apparatus as defined by claim 2 wherein said resonating means includes;

a magnet retainer having said at least one discrete magnet coupled thereto;

a motor;

said magnet retainer being rotatably coupled to said motor; and wherein

rotation of said motor and thereby said magnet retainer causes said at least one magnet to pass by said pickup at a known frequency thereby generating an alternating magnetic flux that in turn causes said blade to resonate.

5. An apparatus as defined by claim 3 wherein said at least one magnet includes a plurality of magnets each mounted on said magnet retainer.

6. An apparatus as defined by claim 1 further comprising;

a mounting bracket, said beam being attached to and cantilevered from said mounting bracket.

7. An apparatus as defined by claim 1 further comprising:

a return bar,

said at least one magnet being positioned between said pickup and said return bar, said return bar being in magnetic communication with said beam.

8. An apparatus as defined by claim 7 wherein said return bar includes a leg portion depending therefrom, an end of which abuts said beam.

9. An apparatus as defined by claim 7 wherein said at least one magnet defines opposing poles, said magnet being positioned so that when one of said poles is aligned with one of said pickup and said return bar, the other of said poles is aligned with the other of said pickup and said return bar, and wherein during operation when said magnetic poles are aligned with said pickup and said return bar a magnetic circuit is formed and magnetic flux flows from said magnet through said beam and return bar and back into said magnet.

10. An apparatus as defined by claim 7 wherein:

said resonating means includes a magnet retainer rotatably coupled to an end of said return bar; and

said at least one magnet being attached to said magnet retainer.

11. An apparatus as defined by claim 10 wherein said magnet defines opposing poles and is attached to said resonating means so that when one of said poles is proximate said pickup, the other of said poles is proximate said return bar, and when one of said opposing ends is proximate said pickup, a first airgap is defined between an end of said magnet and said pickup, and a second airgap is defined between another end of said magnet and said return bar.

12. An apparatus as defined by claim 10 wherein said at least one magnet includes a plurality of magnets each attached to said magnet retainer.

7. An apparatus as defined by claim 1 further comprising:

a return bar,

said at least one magnet being positioned between said pickup and said return bar, said return bar being in magnetic communication with said beam.

8. An apparatus as defined by claim 7 wherein said return bar includes a leg portion depending therefrom, an end of which abuts said beam.

9. An apparatus as defined by claim 7 wherein said at least one magnet defines opposing poles, said magnet being positioned so that when one of said poles is aligned with one of said pickup and said return bar, the other of said poles is aligned with the other of said pickup and said return bar, and wherein during operation when said magnetic poles are aligned with said pickup and said return bar a magnetic circuit is formed and magnetic flux flows from said magnet through said beam and return bar and back into said magnet.

10. An apparatus as defined by claim 7 wherein:

said resonating means includes a magnet retainer rotatably coupled to an end of said return bar; and

said at least one magnet being attached to said magnet retainer.

11. An apparatus as defined by claim 10 wherein said magnet defines opposing poles and is attached to said resonating means so that when one of said poles is proximate said pickup, the other of said poles is proximate said return bar, and when one of said opposing ends is proximate said pickup, a first airgap is defined between an end of said magnet and said pickup, and a second airgap is defined between another end of said magnet and said return bar.

12. An apparatus as defined by claim 10 wherein said at least one magnet includes a plurality of magnets each attached to said magnet retainer.

7. An apparatus as defined by claim 1 further comprising:

a return bar,

said at least one magnet being positioned between said pickup and said return bar, said return bar being in magnetic communication with said beam.

8. An apparatus as defined by claim 7 wherein said return bar includes a leg portion depending therefrom, an end of which abuts said beam.

9. An apparatus as defined by claim 7 wherein said at least one magnet defines opposing poles, said magnet being positioned so that when one of said poles is aligned with one of said pickup and said return bar, the other of said poles is aligned with the other of said pickup and said return bar, and wherein during operation when said magnetic poles are aligned with said pickup and said return bar a magnetic circuit is formed and magnetic flux flows from said magnet through said beam and return bar and back into said magnet.

10. An apparatus as defined by claim 7 wherein:

said resonating means includes a magnet retainer rotatably coupled to an end of said return bar; and

said at least one magnet being attached to said magnet retainer.

11. An apparatus as defined by claim 10 wherein said magnet defines opposing poles and is attached to said resonating means so that when one of said poles is proximate said pickup, the other of said poles is proximate said return bar, and when one of said opposing ends is proximate said pickup, a first airgap is defined between an end of said magnet and said pickup, and a second airgap is defined between another end of said magnet and said return bar.

12. An apparatus as defined by claim 10 wherein said at least one magnet includes a plurality of magnets each attached to said magnet retainer.

13. An apparatus as defined by claim 3 wherein said resonator assembly further comprises:

a return bar having a surface that engages said beam;

said magnet retainer being positioned between said return bar and said pickup;

said at least one magnet defining generally opposing poles and being oriented in said magnet retainer such that when one of said poles is positioned proximate to said pickup, the other of said poles is positioned proximate to said return bar.

14. An apparatus as defined by claim 3 wherein said resonator assembly further comprises:

a return bar having a surface that engages said beam;

said motor defining a drive shaft that extends through said return bar, said magnet retainer being mounted for rotation on said drive shaft; and wherein

when one of said opposing ends is proximate said pickup, a first airgap is defined between an end of said magnet and said pickup, and a second airgap is defined between another end of said magnet and said return bar.

15. An apparatus as defined by claim 13 wherein said at least one magnet includes a plurality of magnets.

16. An apparatus as defined by claim 14 wherein said at least one magnet includes a plurality of magnets.

17. A method employing a tuned resonator for use in cutting sheet-type work material comprising:

providing at least one layer of work material carried on a support surface;

providing a cutter having a cutting blade thereon, said cutting blade forming part of a resonator assembly which, in response to commands issued from a controller causes said blade to vibrate at a predetermined frequency;

causing said vibrating cutting blade to engage said work material;

moving said vibrating cutting blade in response to commands issued from a controller in a predetermined path along said work material to cut pattern pieces therefrom;

monitoring the amplitude and frequency at which said cutting blade vibrates to determine if engagement with said work material has any damping effect on said vibration of said cutting tool; and

compensating for any damping by tuning the frequency at which said cutting blade vibrates.

18. A method as defined by claim 17 wherein said step of providing a cutter includes:

providing a cutting table having a frame that includes a support surface mounted thereon for carrying at least one layer of sheet-type work material, a carriage coupled to said frame for movement back-and-forth there along in a first coordinate direction in response to commands issued from a controller, a cutter head coupled to said carriage for movement back-and-forth in a second coordinate direction also in response to commands issued from said controller, said second coordinate direction being, approximately perpendicular to said first coordinate direction; and a resonator assembly being to said cutter head for movement between a working position wherein said blade engages said work material carried on said support surface, and a non-working position wherein said blade is positioned away from said work material; and wherein

said resonator assembly includes a magnetically permeable beam, a magnetic pickup coupled to said beam, a blade coupled to said beam and defining at least one sharpened edge, at least one discreet magnet positioned proximate said pickup, said magnet and said pickup defining an air gap therebetween, resonating means for moving said at least one discreet magnet relative to said pickup to create an alternating magnetic field, thereby causing said pickup to vibrate which in turn causes said beam and said blade to vibrate.